CLAIMS

1.   A method of searching for functional defects in a description of a circuit, the method comprising:

5            simulating the functional behavior of said circuit in response to a first test vector;
            wherein the simulation has a current state prior to said step of simulating;
            automatically restoring the simulation to
10        said current state without causing the simulation to pass through a reset state, said reset state being a state of the simulation in response to reset, said step of automatically restoring being performed after said simulating step;
15            simulating, after said step of automatically restoring, the functional behavior of said circuit in response to a second test vector.

2.   The method of Claim 1 wherein said circuit
20    includes at least a first controller capable of performing a plurality of first state transitions, and a second controller capable of performing a plurality of second state transitions, the method further comprising:
25            automatically determining, during each of said steps of simulating, for each pair of a first state transition and a second state transition performed simultaneously at least once, the number of times of said simultaneous performance, said

number indicating a measure of the functional
testing of said description.

3.    The method of Claim 1 further comprising:
5             automatically applying a predetermined
         rule to identify said second test vector.

4.    The method of Claim 1 wherein said circuit
includes at least a first controller capable of
10   performing a plurality of state transitions, the method
further comprising:
         automatically enumerating said state
         transitions; and
         automatically applying a predetermined rule
15   to identify said second test vector;
         wherein said step of automatically applying
         uses as input to said predetermined rule at least
         one of said state transitions.

20   5.    The method of Claim 1 wherein said circuit
includes at least a first controller capable of
performing a plurality of first state transitions, and
a second controller capable of performing a plurality
of second state transitions, the method further
25   comprising:
         automatically determining, during each of
         said steps of simulating, for each pair of a first
         state transition and a second state transition
         performed simultaneously at least once, the number
30       of times of said simultaneous performance; and

automatically applying a predetermined rule to identify said second test vector;

wherein said step of automatically applying uses as input to said predetermined rule at least

5      one number determined by said step of automatically determining.

6.    The method of Claim 1 wherein:

said current state is generated by simulating

10     said circuit in response to a predetermined testbench.

7.    The method of Claim 1 wherein said circuit includes at least one asynchronous clock signal, said

15  asynchronous clock signal having a first clock state when the simulation is in said current state, the method further comprising:

setting the asynchronous clock signal to a second clock state, said second clock state being

20     different from said first clock state;

wherein said step of setting is performed prior to said step of automatically restoring, and after said step of simulating with said first test vector.

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8.    A method for searching for functional defects in a description of a circuit, the method comprising:

automatically converting said description into a graph;

automatically examining said graph for an
instance of a predetermined pattern;

simulating the functional behavior of said
circuit in response to a first test vector in a
5        plurality of test vectors;

wherein the simulation has a current state
prior to said step of simulating;

automatically flagging, during said step of
simulating, the functional behavior of said
10       instance in violation of a rule associated with
said predetermined pattern;

automatically restoring the simulation to
said current state, said step of automatically
restoring being performed after said simulating
15       step;

simulating, after said step of automatically
restoring, the functional behavior of said circuit
in response to a second test vector.

20   9.   The method of Claim 8 wherein said circuit
includes a first controller capable of performing a
plurality of first state transitions, and a second
controller capable of performing a plurality of second
state transitions, the method further comprising:

25       automatically determining, during each of
said steps of simulating, for each pair of a first
state transition and a second state transition
performed simultaneously at least once, the number
of times of said simultaneous performance, said

number indicating a measure of the functional
testing of said description.

10.   A method for measuring the functional testing of a
5   description of a circuit, said circuit including a
first controller capable of performing a plurality of
first state transitions, and a second controller
capable of performing a plurality of second state
transitions, the method comprising:
10          testing the functional behavior of said
circuit; and
            automatically determining, during said step
of testing, for each pair of a first state
transition and a second state transition performed
15   simultaneously at least once, the number of times
of said simultaneous performance, said number
indicating a measure of the functional testing of
said description.